OCO-2 / OCO-3 Status

Minutes of the TIM

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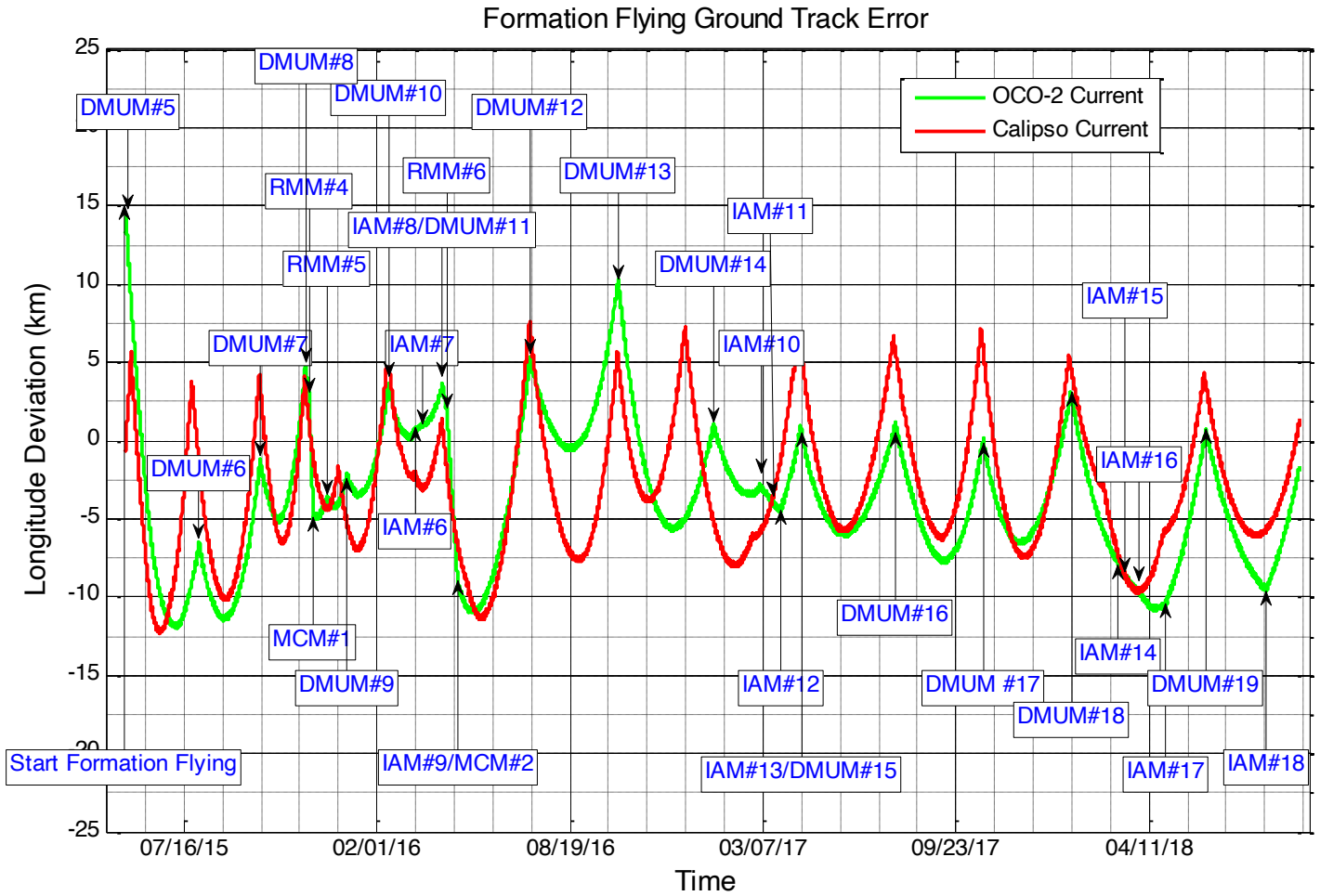
December 11, 2018

OCO-2 Status Summary

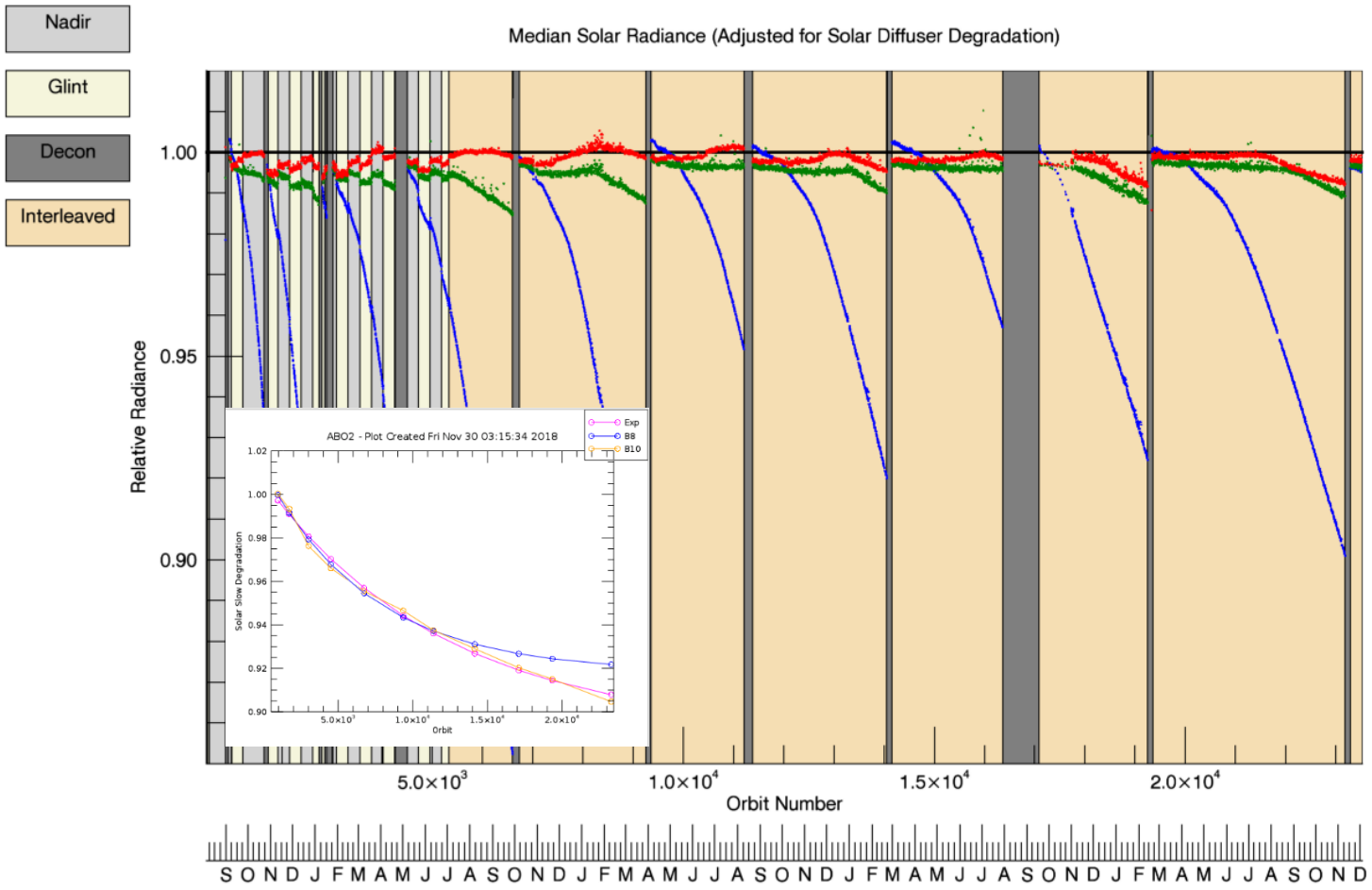
- **Observatory Status:** Nominal
  - Over 4.3 years and 23650 orbits completed
  - Last debris avoidance RMM (#7) on 11/05/2018
  - Next Drag Makeup Maneuver (DMM) tentatively scheduled for 10 March 2019 to coincide with an Inclination Angle Maneuver (IAM)
- **Instrument Status:** Nominal
  - Suspected Single Event Upset of SCO2 Data Processing Unit on 12/03/2018. DPU reset normally. 41 hours of data (orbits 23526-23550) lost
  - Error in slow degradation correction identified and will be corrected in B10
- **Science Status:** Nominal
  - 265 million soundings (through October 31, 2018) in the V8r collection publicaly available at GES DISC
  - V9r products through October 2018 publicly available at the GES DISC.
  - “Build 10” testing plan beginning to come together
  - ACOS/GOSAT version 9, slowly coming together
    - Production schedule is under review

Formation Flying with CALIPSO



OCO-2 maintained a tight formation with CALIPSO between May 2015 and September 2018, when CALIPSO left the A-Train.

Throughput Trending

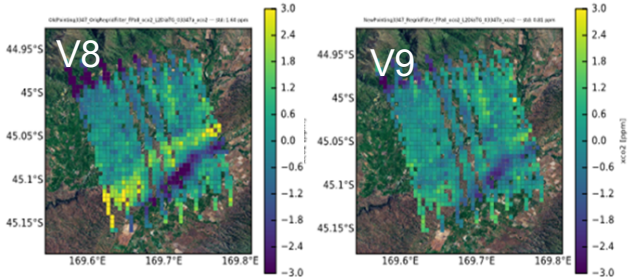


An error in the slow degradation correction (Blue line in inset) introduced a small (~1%) radiometric error in the ABO2 throughput in the v8 product.

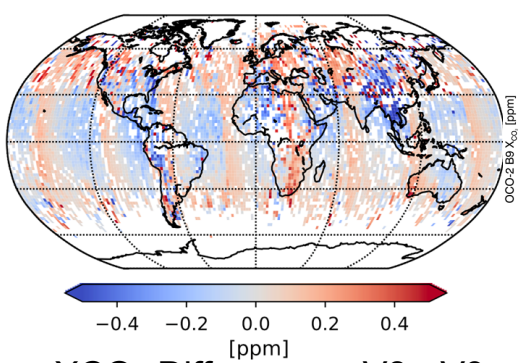
The OCO-2 V9 Product

- The OCO-2 Team released the Version 9 (V9) product on 10/15.
  - refined pointing
  - a correction to the prior meteorology
  - updated filtering and bias correction
- These updates
  - reduce bias in the presence of rough topography
  - Provide better sampling over topical and boreal forests with slightly more scatter
- This new dataset is available through the GES-DISC

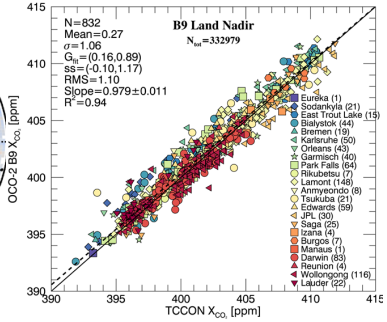
https://disc.gsfc.nasa.gov/datasets?keywords=oco-2&page=1



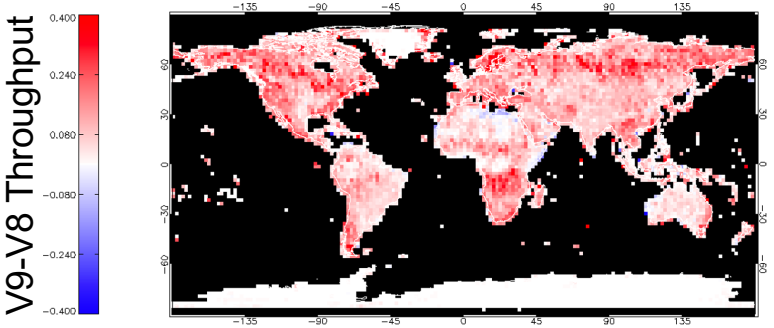
Pointing Correction Reduces XCO_2 Bias



XCO_2 Differences: V8 - V9

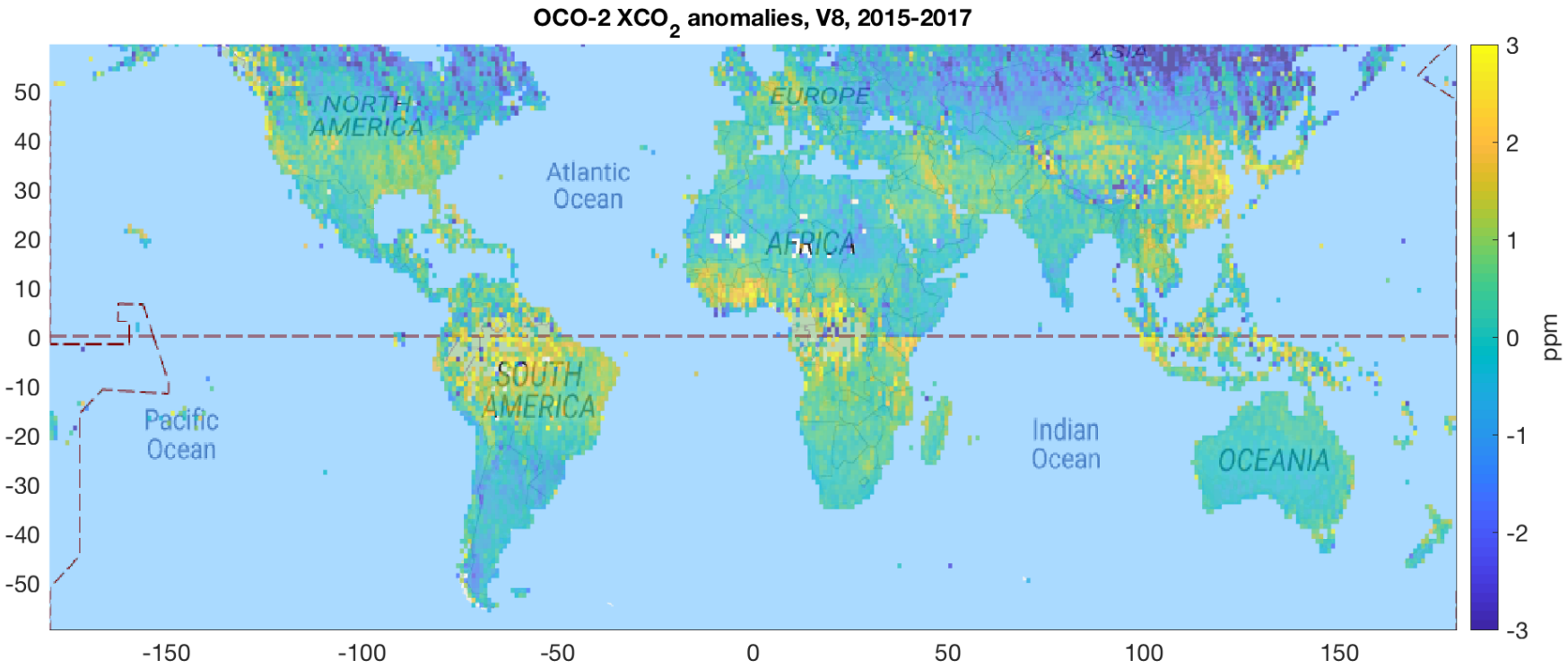


V9 vs TCCON



Improved Coverage over Tropical and Boreal Forests

Persistent X_{CO2} Anomalies
Comparison of the V8 and V9 Products



- OCO-2 XCO_2 estimates are being used to quantify persistent anomalies associated with CO_2 emissions (sources) and uptake (sinks).

[Hakkarainen et al. 2018]

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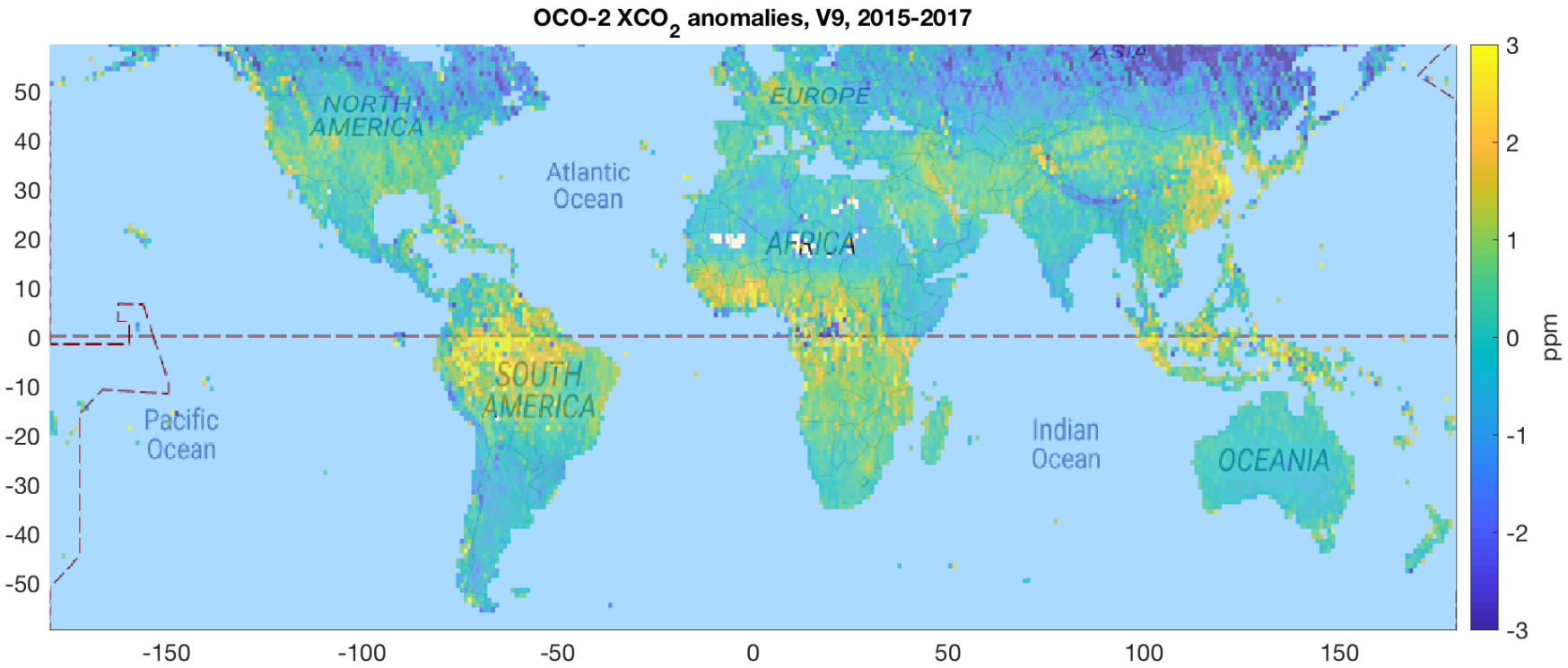
Persistent X_{CO2} Anomalies
Comparison of the V8 and V9 Products



- While the V8 and V9 anomalies are similar, the V9 product has much less scatter in areas with rough topography (i.e. Himalayas, Canadian Rockies)

[Hakkarainen et al. 2018]

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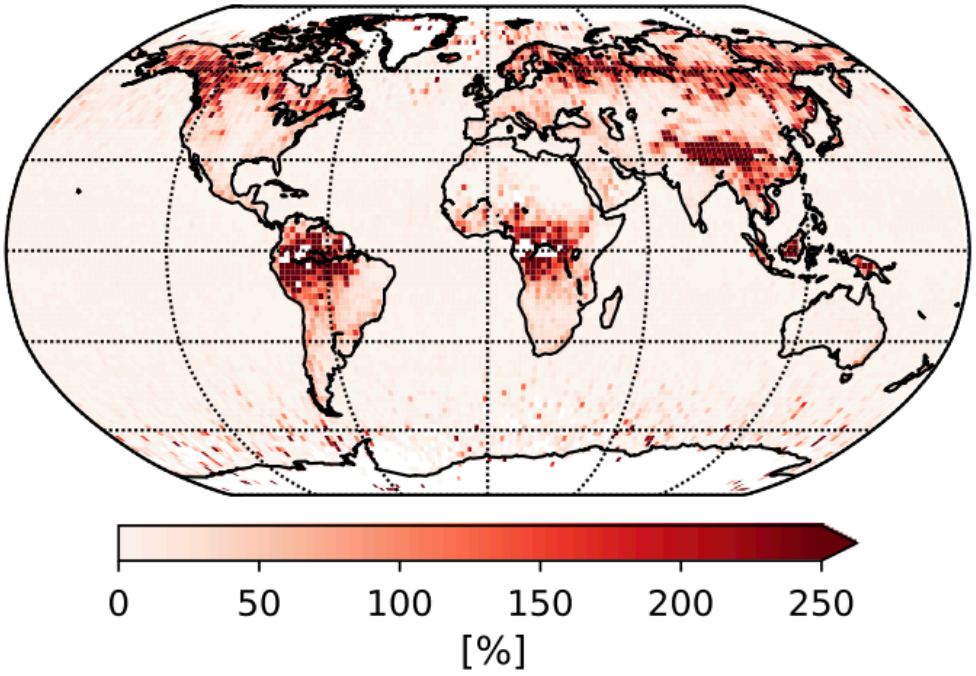
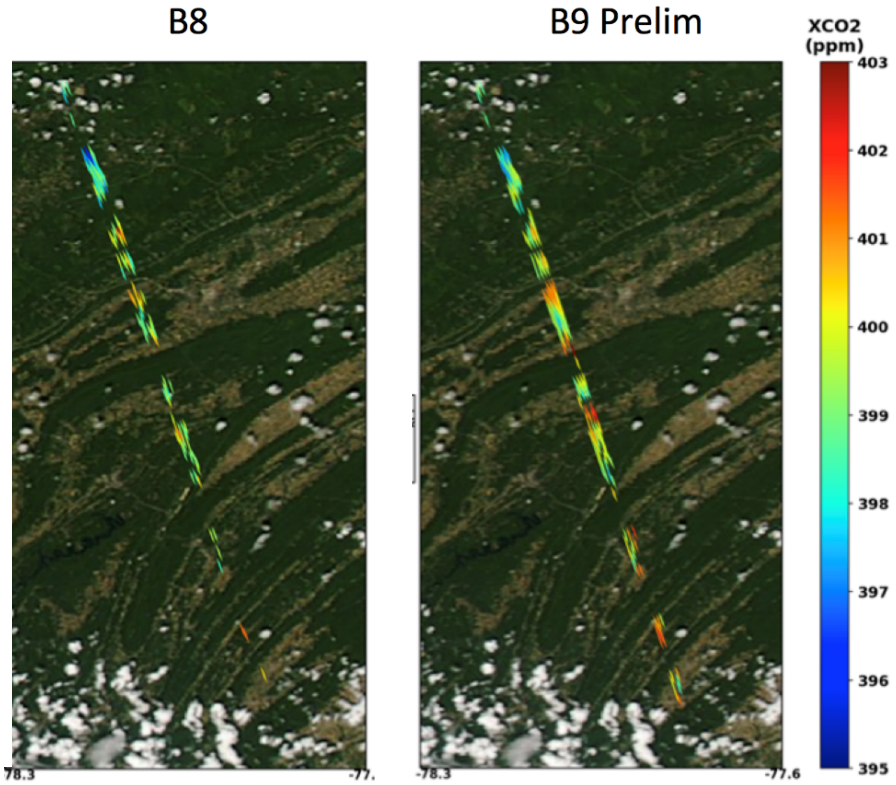
Improved Yields



Matt Kiel et al., AMTD 2018



Emily Bell (CSU)

The pointing correction, combined with re-tuned quality filters improved the yield, especially in regions with rough topography and over dark forested surfaces.

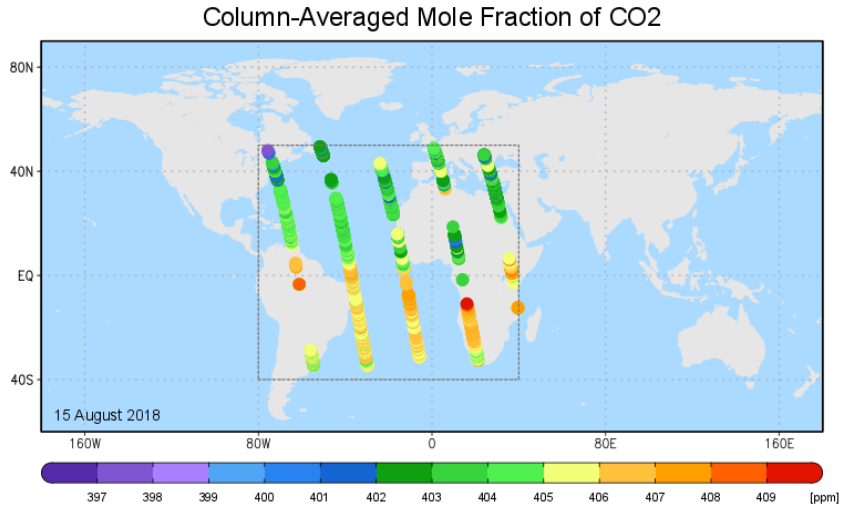
Subsetting Capability Added for OCO-2 "Lite" Files

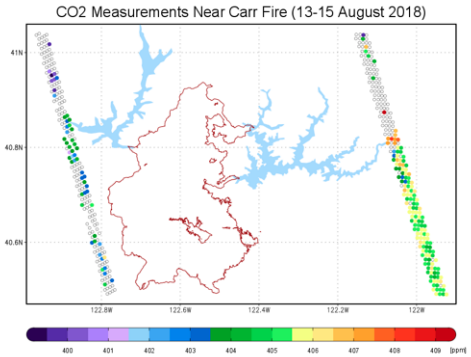
- OCO-2 and ACOS Level 2 "Lite" files can now be subsetted spatially and by variable
  - Spatial subsets may be selected within a bounding box or within a user-defined radius around a user-specified location ("point+radius subsetting")

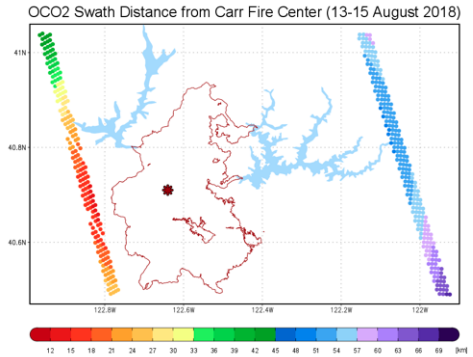
- This service is now operational

https://disc.gsfc.nasa.gov/information/news?title=Subsetting%20capability%20added%20for%20OCO-2%20%22Lite%22%20files

- Questions:
  - Dana Ostrenga, Thomas Hearty, Paul Huwe, Jennifer Adams, Andrey Savtchenko, Jerome Alfred, Lena Iredell



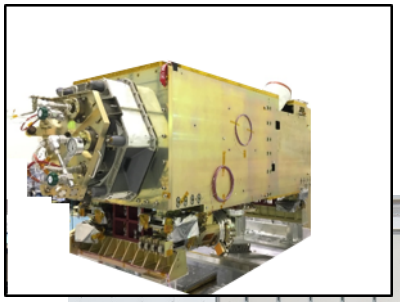




Left: XCO2 for two OCO-2 orbits from 13 (left) and 18 Aug (right) that passed within 100 km of the Carr Fire.

OCO-3 Summary

- OCO-3 shipped to Cape Canaveral on November 30
  - Almost finished with the check out and preparations for launch.
  - It will be stored until February, and will then go to Dragonland for integration in the Dragon trunk and then loading on the Falcon 9 launch vehicle.
  - Current launch date: March 16, 2019 from the Space-X launch pad



The OCO-3 Team